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The Effect of Participant Gender and Exposure to Social Embarrassment Messages on Evaluations of Binge Drinking Messages

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The Effect of Participant Gender and Exposure to Social Embarrassment Messages on Evaluations of Binge Drinking Messages

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Table of Contents

CHAPTER 1

Introduction

In life, we are buffeted with health messages—from commercials, news reports, public service announcements and other sources — that attempt to both educate and communicate the importance of health behaviors. Meta-analysis has shown that the overall effect sizes of various health campaigns on behavior change are small, but quantifiable (Anker, Feeley, McCracken, & Lagoe, 2016; Snyder & Hamilton, 2002; Snyder et al., 2004). Experimental studies examining message effects have principally focused on the effects of one-time exposure to a single message. The consensus drawn from previous literature is that greater frequency of exposure are better for enhancing the efficacy of message persuasiveness (Zajonc, 1968) and that exposure to a stimulus can lead to more positive evaluations of that stimulus. Other research has shown that a greater level of message reach is related to improved campaign efficacy (Snyder & Hamilton, 2002). This has led to many scholars growing concerned with audience members' lack of repeated exposure (e.g. Hornik, 2002), while simultaneously overlooking the potential effects that overexposure to multiple, similar messages can have (Cho & Salmon, 2007). There is evidence that suggests the relationship between the number of times a person is exposed to a stimulus and evaluation is curvilinear (Bornstein, 1989; Hamid, 1973; Jeong, Tran, & Zhao, 2012), which indicates that there exists a limit to the persuasive efficacy of exposure before recipients begin to form negative evaluations of the stimuli.

Message fatigue is the process by which people grow tired of being repeatedly exposed to identical or similar messages. This phenomenon is particularly relevant for the health field due to the high prevalence of health messages that encourage comparable, if not the same, health behaviors. Perceived message fatigue is related to different types of negative appraisals of

messages, including: increased counter argument, increased annoyance towards the message, increased avoidance towards similar messages, and decreased information seeking (So, Kim, & Cohen, 2017). The variables found to correlate with fatigue in So, Kim, and Cohen's (2017) study warrant further scholarly consideration since exposure is required for messages to have an effect (Hornik, 2002).

For health messages specifically, overexposure creates an issue between having enough health messages in order to inform and alert at-risk populations, while simultaneously avoiding potential fatigue responses. Feelings of fatigue (So, Kim, & Cohen, 2017) can decrease the efficacy of health interventions, campaigns, and treatments, which reinforces the notion that an appropriate balance of message exposure must be found. Though the construct of message fatigue is not fully understood, fatigue is a process that hinders the amount of attention one elects to pay to a message. As past research has found (So, Kim, & Cohen, 2017), the characterized inattentiveness of fatigued individuals can hinder the persuasive effectiveness of health messages.This indicates that it is important to continue to explore what factors are related to perceptions of fatigue so that campaigns can be structured and that messages can be designed accordingly in order to optimize effectiveness. There is substantive evidence to suggest that individual factors and different forms of message evaluation (Stephenson & Palmgreen, 2001) can influence the perceived effectiveness of health messages.

In particular, sensation seeking as a personality trait has been increasingly studied in the health field due to those who are high in the trait being more prone to taking risks (Zuckerman, 1979; Zuckerman, Eysenck, & Eysenck, 1978). Research has shown that high sensation seekers attend to messages differently than low sensation seekers, in that those high in the trait require more stimulating material in order to fully maintain attention (Palmgreen et al., 1991).

While no research, to our knowledge, has explicitly examined how these factors affect perceived message fatigue, research should continue to work towards a more nuanced comprehension of what extraneous factors influence feelings of fatigue. To this end, the present paper offers further understanding of how message fatigue is conceptually related to different personality factors, as well as how it is associated with various forms of message appraisal by proposing a model that shows how perceptions of message fatigue act to mediate the relationship between personality and message-specific factors.

In the following chapters, a model of message fatigue and message evaluation is proposed and tested. Theoretical justifications for the relationships among variables are provided, along with hypotheses explaining the different pathways present in the model. In chapters 3 and 4, the experimental methodologies employed in the study and hypothesis analyses are, respectively, discussed. In chapter 5, theoretical and applied implications and recommendations for health communication message design are discussed.

CHAPTER 2

Literature Review

Predictors of Message Fatigue

Message fatigue is the degree to which individuals express feelings of tedium, annoyance, and exhaustion when exposed to either identical or similar messages (So, Kim, & Cohen, 2017). Fatigue can be acute or chronic, in that acute message fatigue occurs when an individual is repeatedly exposed to *identical* messages, whereas chronic fatigue occurs after repeated exposure to a group of *similar* messages. Acute fatigue is fairly well understood from advertising literature, which has found that the threshold for fatigue to occur is between three and five exposures (Belch, 1981) and that feelings of fatigue can lead to large decreases in persuasive efficacy. However, for the field of health, it is also appropriate to examine chronic fatigue, as a target population may be exposed a number of different messages pertaining to the same topic (i.e., safe sex, anti-smoking messages) over time.

Psychological reactance theory (Brehm, 1966) states that people who are high in trait reactance are inclined to having aversive affective response towards messages, offers, or persons that would inhibit personal freedoms. PRT is pertinent for health communication research as many persuasive health appeals attempt to dissuade individuals from engaging in certain behaviors, thus limiting perceived personal freedom. When individuals feel their freedom is threatened, or eliminated, they are motivated to take actions to restore their freedom by exhibiting resistance to the external persuasive pressure. In the context of the present study, PRT illuminates the process by which people develop feelings of fatigue because exposure to an unwanted message would be oppositional to a fatigued individual's desire to avoid messages that they perceived as tedious, or even irrelevant. In other words, mere exposure to a message, which

one experienced message fatigue towards, may elicit feelings of reactance towards that message. Further, if one were prone towards reactance, they would be more reluctant towards willingly exposing themselves to messages that inhibited personal freedoms.

H1a: Trait reactance will positively predict individuals' chronic message fatigue.

Sensation seeking is characterized by the search for experiences that are novel, complex, and varied (Zuckerman, Eysenck, S., & Eysenck, H., 1978). Sensation seekers are characteristically inattentive (Dom, Hulstijn, & Sabbe, 2006; Rimmö & Åberg, 1999) and have been shown to be more prone to engaging in a variety of health risks, such as drinking and marijuana smoking (Hittner & Swickert, 2006; Stephenson & Palmgreen, 2001). Though no study to our knowledge has shown an association between sensation seeking and chronic message fatigue, the two are conceptually similar. For instance, sensation seekers have been shown to attend better to messages that are complex, have highly arousing content, and are novel in nature (Palmgreen et al., 1991). Meanwhile, when high sensation seekers view messages that are lacking in these traits they are likely to become despondent towards the message and pay less attention to it. If one were to experience feelings of chronic message fatigue towards a particular message, they would be less likely to perceive it as novel.

H1b: Trait sensation seeking will positively predict individuals' chronic message fatigue.

So and Popova (2018) found that individuals who expressed greater sentiments of anti-smoking message fatigue were younger, male, and were current smokers (as opposed to those who were quitting smoking or did not smoke). While one should caution generalizing these findings to the present study given the innate differences between smoking and drinking messages (as well as behaviors, perceived risks, and perceived benefits of tobacco versus alcohol

use), it provides a useful insight that previous behavior is contextually associated with perceptions of fatigue. As such, we predict:

Past drinking behavior (H1c) and initial attitudes towards alcohol consumption (H1d) will positively predict individuals' chronic message fatigue.

Chronic Message Fatigue and Behavioral Outcomes

It has been well established that narratives can have substantive persuasive influence on consumers' actual behaviors and attitudes (e.g., Appel & Richter, 2007; Strange & Leung, 1999) and that message reactance can cause boomerang effects to occur (Brehm, 1966). This is particularly relevant for the present study, which seeks to understand whether changes in message fatigue are predictive of behavioral outcomes. Binge drinking is a severe health threat, especially among college students (Lederman, Stewart, Goodhart, & Laitman, 2003). A large number of interventions have sought to cease binge drinking behaviors among college students (Lee & Bichard, 2006). Research has not yet examined if feelings of fatigue can elicit similar consequences as a boomerang effect, such that feelings of fatigue could cause recipients of a message to be more inclined towards engaging in the message's targeted behavior. Since chronic message fatigue is characterized by one's inattention towards a message, this may indicate that fatigued individuals do not adequately process a message to the extent where they are sufficiently capable of evaluating its persuasive claims. Feelings of fatigue are likely to inhibit a message from achieving its desired persuasive outcomes. Granted that chronic message fatigue has been shown to hinder the persuasive efficacy of health messages (Kim & So, 2018; So, Kim, & Cohen, 2017), it is expected that:

Individuals' change in perceived chronic message fatigue from before and after message exposure will positively predict their post-exposure attitudes towards alcohol

consumption (H2a), negatively predict their information seeking intentions (H2b) and positively predict their behavioral intent to binge drink (H2c).

Chronic Message Fatigue and Message Evaluations

Message fatigue has been found to be positively associated with different forms of message appraisals. For instance, it was found that message fatigue towards health messages is negatively associated with attention and information seeking, while being positively associated with message avoidance and message counter argument (So, Kim, & Cohen, 2017). Though it was not empirically tested in the So et al. (2017) study, the results seem to indicate that perceptions message fatigue would lead to lessened perceptions of argument quality.

Identification with media characters has been shown to alter one's own self-concept and perceived enjoyment (Hefner, Klimmt, & Vorderer, 2007). Extant research suggests that character identification is associated with attention paid to a source of stimulus, as well as memory recall (Maccoby & Wilson, 1957). For the health field, messages with identifiable characters are particularly important, because as research suggests, identification with media characters increases the persuasive efficacy of messages on attitudes and behavioral intent (Diekman, McDonald, & Gardner, 2000). Therefore, we expect that greater identification with the characters in the message will lessen the likelihood that people will experience message fatigue.

The novelty of a message has been shown to lead to greater enjoyment (Baek & Kim, 2016), as well as short-term recall (Sheinin, Varki, & Ashley, 2011). Further, a lack of message novelty decreases the likelihood that one may send that message to someone else (Harrigan, Achananuparp, & Lim, 2012) and predicts how much attention a message will receive (Wu & Huberman, 2007). Wu and Huberman's (2007) results indicated that after a message ceased to be

novel, rather, after its initial novelty decayed recipients of the message gave it less attention. In accordance with So, Kim, and Cohen's (2017) findings of the effects of message fatigue, perceived message novelty should impact viewers' fatigue responses. Message fatigue is characterized by a lack of attention to and general despondency towards messages that elicit fatigue responses.

While So, Kim, and Cohen (2017) offer a thorough conceptualization of message fatigue their study did not identify message-specific factors or forms of message appraisal that are predictive of either the development of fatigue responses or the inhibition of fatigue development.

RQ1: Which types of message evaluation will predict changes in perceived chronic message fatigue?

Gender differences and perceptions of alcohol

Extant research has found notable gender differences in how men and women perceive alcohol. For instance, Spigner, Hawkins, and Loren (1993) found that women were significantly more likely than men to associate the consumption of alcohol and other substances with risk. Other researchers (Nolen-Hoeksema, 2004) have noted that this may be due to various protective behaviors that women adopt while drinking, and to numerous factors (i.e., later brain maturation, low response to alcohol, socialized gender roles) that increase the risk of males being more susceptible to disruptive drinking behaviors in later life (Schulte, Ramo, & Brown, 2009). Research has also found that men are more likely to drink, use alcohol more frequently, and in larger quantities than women (Wilsnack, R., Vogeltanz, Wilsnack, S., & Harris, 2000). Thus, we hypothesize that:

H3a: Males will have greater perceived alcohol benefits than females.

H3b: Males will have lesser perceived alcohol risk than females.

H3c: Males will have drink alcohol more frequently than females.

Social embarrassment messages

Previous literature examining the effect of public displays of social embarrassment and then subsequent restitution has found that respondents rate actors who commit a socially embarrassing act were rated favorably when restitutions were made (Semin & Manstead, 1982). Further, Stocks, Lishner, Waits, and Downum (2011) found that it is possible to feel empathic embarrassment and concern for a target, dependent on whether 1) the target is liked and 2) if one can imagine oneself as the target. This suggests that identification with a message's actor who committed a socially embarrassing act could influence whether one will view the actor more or less favorably.

However, committing a socially embarrassing act could be a form of face threat (Bond, 1982). Loss of face can be socially damaging (Ho, Fu, & Ng, 2004) and can result in harsh social judgments and ostracization (Keltner & Anderson, 2000). Given these contrasting findings, it is unclear of how audience members would identify with actors committing socially embarrassing acts.

RQ2: How will participants exposed to a message designed to elicit social embarrassment identify with the characters in the message?

There is evidence to suggest that fear of social rejection can influence attitude change (Wood, 2000). For instance, for individuals who are sensitive to the consequences of their behaviors (those high in self-monitoring) (Lavine & Snyder, 1996), appeals that emphasized actions that would make them appear more socially attractive exhibited greater attitude change.

H4a: Participants exposed to a social embarrassment message will be more concerned with social embarrassment.

H4b: Participants exposed to a message designed to elicit social embarrassment will have more perceived risks associated with drinking alcohol.

H4c: Participants exposed to a message designed to elicit social embarrassment will have fewer perceived benefits associated with drinking alcohol

Trait sensation seeking and perceived message sensation value

There are individual differences in the degree to which people seek out novel or exciting experiences. Those who often seek out new, complex, and intense situations are classified as high sensation seekers (HSS), while those who are low sensation seekers (LSS) prefer lesser levels of these experiences. Since HSS are more prone to taking risks than LSS are (Furnham & Saipe, 1993; Palmgreen et al., 1991; Roberti, 2004), sensation seeking has been useful to campaign planners in identifying those at greater risk. The concept is a relevant trait for health researchers, because it suggests why some people engage in health threatening behaviors.

Regarding drinking behaviors specifically, meta-analysis has found that there is a small-to-moderate relationship between sensation seeking and alcohol consumption (Hittner, & Swickert, 2006). In particular, the dimension of sensation seeking that has been found to most strongly relate to drinking behaviors is disinhibition (Schwarz, Burkhart, & Green, 1978). Research on the disinhibiting effects of alcohol has found that alcohol only disinhibits behavior if participants are aware they are drinking alcohol (Schwarz, Burkhart, & Green, 1978), which suggests that losing social control while drinking is a culturally sanctioned phenomenon.

H5a: Sensation seeking will be associated with less perceived alcohol risk.

H5b: Sensation seeking will be associated with greater perceived alcohol benefits.

There are also differences in how specific message features can draw viewer attention dependent on an individual's level of sensation seeking. Research has found that those who are high sensation seekers and low sensation seekers each attend to specific types of messages,

dependent on a message's innate sensation value (Palmgreen et al., 1991) Specifically, message sensation value is the degree to which a message elicits sensory, affective, and arousing responses that have certain degrees of sensory, affective and arousing output. High sensation seekers require that stimuli provide greater yield for each of the message characteristics. In addition, Donohew, Lorch, and Palmgreen (1991) found that messages high in sensation value (HSV) were more effective in changing high sensation seekers' behavioral intent, while messages low in sensation value (LSV) were more effective in changing LSS' behavioral intent. Other research has echoed this finding. For instance, Lu, A., Chi, and Lu, C., (2017) found that HSV and LSV are most effective when matched with the corresponding level of trait sensation seeking, and that HSV and LSV messages diminish in effectiveness if they are matched with individuals with differing levels of sensation seeking (i.e., HSV and LSS). Given that high sensation seekers has been shown to be strongly associated with both impulsivity and inattention (Dom, Hulstijn, & Sabbe, 2006; Rimmö & Åberg, 1999), it is imperative to take into consideration individual difference factors into consideration when planning campaigns and interventions.

Research has not yet examined the relationship between trait sensation seeking and perceived chronic message fatigue. However, as stated earlier in the review, high sensation seekers have been found to exhibit numerous characteristics that are conceptually similar to a fatigued individual. For instance, high sensation seekers are characterized as having a propensity towards seeking out novel and varied experiences (Zuckerman, Eysenck, S., & Eysenck, H., 1978, McCourt, Gurrera, & Cutter, 1993), and are characteristically inattentive (Dom, Hulstijn, & Sabbe, 2006; Rimmö & Åberg, 1999) to messages that do not fit these criteria.

H6a: Sensation seeking will moderate the relationship between novelty and post-exposure chronic message fatigue, such that high sensation seekers will experience less fatigue if exposed to novel messages

H6b: Sensation seeking will moderate the relationship between novelty and attention, such that high sensation seekers will pay more attention to messages perceived as novel.

Message fatigue is a relatively new construct (So, Kim, & Cohen, 2017), and research has not yet fully defined the correlational associations of the construct to specific message qualities, such as HSV or LSV. However, as So, Kim, and Cohen (2017) suggest, manipulating different message-specific factors may induce either greater or lesser perceptions of chronic message fatigue (Atkin, 2001). To better understand the relationship that message sensation value has with chronic message fatigue, we propose the following:

H7a: Message sensation value will negatively correlate with perceptions of chronic message fatigue.

Stephenson (2002) suggests that higher levels of sensation seeking could lead to greater resistance towards messages. Stephenson claims that due to HSS being more likely to engage in risky behaviors (such as substance use), they would be more likely to be personally involved, and subsequently, more likely to form counterarguments against the message. However, in Stephenson's (2002) article, the correlational link between trait sensation seeking and counterargument was not tested. Rather, Stephenson tested sensation seeking as a moderating variable between sensory-based and argument-based processing.

RQ3: What is the relationship between trait sensation seeking and counterargument formation?

Moreover, research has not explicitly linked message sensation value to counterarguing. While it is known that high sensation seekers and low sensation seekers attend better to high sensation value and low sensation value messages, respectively, research has not demonstrated whether exposing HSS and LSS to the non-corresponding message sensation will cause them to react aversively towards the message. However, given that HSS and LSS pay less attention to non-corresponding messages than to corresponding messages (Lu, A., Chi, & Lu, C., 2017), respondents may elicit other forms of negative message appraisal and reactance. Low sensation seekers may pay less attention to high sensation value messages, but if they are not processing it, they may be less likely to generate counterarguments to the message.

H7b: Message sensation value will moderate the relationship between sensation seeking and counter argument, such that high sensation seekers exposed to low sensation value messages will have greater counterarguments and that high sensation seekers exposed to low sensation value messages will have fewer counter arguments.

Disgust and Humor Persuasive Appeals

Disgust. Regarding the role that emotions have in the persuasion process, much attention has been paid to the persuasive effect of fear (Dillard, 1994; Hale & Dillard, 1995). Meanwhile, little attention has been given to the persuasive role of other emotions (Nabi, 1999). The role of other discrete negative emotions, such as disgust, anger, sadness, and guilt, are not yet well understood.

Disgust theorists have consistently observed that women are more prone to disgust than men (Olatunji et al., 2007; Templer, King, Brooner, & Corgiat, 1984). This could be explained by innate existing biological differences between men and women. As Fleischman and Fessler (2011) note, during a woman's menstrual cycle, her immune system is temporarily suppressed and this time has been found to be associated with greater disgust sensitivity. Accordingly:

H8a: Females will be more susceptible to disgust than males.

It is suggested that disgust elicitors can be categorized by one of seven main domains of disgust, being: animals, food, body products, sex, body envelope violations, death, and hygiene (Haidt, McCauley, & Rozin, 1994). Disgust is characterized as a prosocial emotion (Buck, 2014) due to its influence on how people interact with others. For instance, according to Nabi (1999), feelings of disgust promote the action tendency to turn away from the object or idea of disgust and shield or defend oneself from it. If another person's body was perceived as disgusting, one's natural reaction may be to shun, isolate, or treat that person more negatively. Disgust has also been shown to relate to other forms of negative affect, such as anger and guilt (Tangney, Miller, Flicker, & Barlow, 1996).

H8b: Perceived disgust will positively correlate with perceived anger.

Familiarity with a disgusting object or idea has also been shown to have desensitizing effects. That is, people are capable of adapting to disgusting things in order to reduce feelings of discomfort and other disgust responses. For example, the effect of familiarity on disgust reduction has been illustrated in numerous contexts such as touching and approaching a cadaver (Rozin, 2008) and in treating arachnophobia in children (De Jong, Andrea, & Muris, 1997). A study on college student drinking norms (Kypri & Langley, 2003) found that students tend to overestimate incidences of heavy binge drinking and of drinking-related vomiting, which was also related to participant self-reported drinking behaviors. These results suggest that frequent drinkers would be desensitized towards anti-drinking disgust messages due to the perceived normativity of and familiarity towards excessive drinking ramifications.

H8c: Drinking frequency will negatively correlate with disgust.

Humor. Previous reviews have found that perceived humor attracts greater attention and is associated with source liking (e.g., Weinberger & Gulas, 1992). Nabi, Moyer-Gusé, and Byrne (2007) found that humorous messages are negatively associated with counterargument formation. The researchers explained this by suggesting that humorous messages acted as a distraction that hindered how critically respondents processed messages. Rather, the cognitive focus was placed on following the plot of the message, in order to see the message's outcome (and the joke's punchline) (Nabi, Moyer-Gusé, & Byrne, 2007). This contrasts Petty and Cacioppo's (1986) Elaboration Likelihood Model that posits greater cognitive elaboration provokes more counterargument to counterattitudinal messages. However, as other researchers have argued (Green & Brock, 2000), entertainment messages may inhibit audience members' ability to critically process information.

H9a: Perceived humor will be negatively associated with counterargument.

H9b: Perceived humor will be negatively associated with message fatigue.

CHAPTER 3

Method

Experimental Procedure, Design, and Sample

Design. An online experiment tested how different forms of message appraisals mediate the relationship between personality and message factors and variables associated with behaviors and attitudes. Participants were randomly assigned to receive either high or low social embarrassment conditions.

Sample. In accordance with Institutional Review Board guidelines, all participants were required to be at least 18 years of age and to sign a consent form. Participants for the study were recruited from a large introductory Communication course at a large Northeastern university. As compensation for participating in the study, participants were rewarded course credit commensurate with the amount of time required to complete the study.

A total of 316 participants took part in the experiment. Of these, 62 were removed due to lack of response. After these individuals were removed, an additional 35 were removed due to failing either of the two attention checks or the knowledge check, 25 were removed from the final analyses due to expressing that they had never tried alcohol, 1 was removed due to being an outlier. The final sample consisted of 193 undergraduate students who were predominately female (123 female, 69 male, 1 preferred not to indicate their gender), were 78.2% White (5.2% Black, 10.4% Asian, and 5.7% other), the sample ranged in age from 18-23 with an average age of 19.04 (SD = 1.09). Upon completion of the study, all participants were debriefed about the objectives of the study. No personal or identifying information was collected.

Though the study utilized a convenient college sample, the population is appropriate for the message topic of anti-drinking public service announcements. College students are frequently

the targets of such persuasive appeals (Lee & Bichard, 2006), which made them an ideal population to test whether manipulating specific message factors could reduce fatigue responses.

Procedure

After receiving Institutional Review Board approval, the study was conducted online and hosted through Qualtrics. The participants were randomly exposed to one of the two experimental conditions. The two different messages targeting drinking behavior (one of which featured a male actor, while the other featured a female actor) were previously used by the Alcohol Know Your Limits Campaign and then altered for experimental purposes. The participants completed a pretest, viewed a brief distraction task video, viewed one of the experimental video manipulations, and then completed message evaluation measures.

In the study's pretest, participants were asked to indicate how frequently they drank in the past, their injunctive norms towards alcohol consumption, their baseline feelings of chronic message fatigue towards anti-binge drinking messages, their level of psychological reactance, their level of sensation seeking, and their baseline tendencies to seek out information related to safe drinking behaviors. In the study's posttest, the participants indicated their perceived risk towards alcohol consumption, perceived benefits of alcohol consumption, their behavioral intent to binge drink, their attitudes towards alcohol consumption, their perceived sensation value of the stimuli, their social embarrassment susceptibility, their perceptions of the stimuli's novelty, counterargument formation, attention, degree of character identification, their perceptions of the stimuli's argument quality, how humorous they thought the stimuli were, and the degree to which the stimuli elicited feelings of disgust or anger.

On average, respondents took 27 minutes to complete the study. To control for order effects, all items were presented to the participants randomly. In addition, regardless of experimental condition, the stimuli materials were presented to respondents in a random order.

Stimulus Materials

The stimulus materials for the study were taken from preexisting anti-drinking PSAs that were developed by the Alcohol Know Your Limits Campaign. The two videos used in the stimulus ranged in length from 55-seconds to one minute and six seconds in length, dependent on experimental condition. The presentation of the anti-binge drinking PSAs to participants was randomized so as to prevent order effects.

The videos used in the study featured similar content, with one depicting a man and the other a woman. The young, college-aged person is in their apartment, preparing to go out. It is initially unclear as to what the male and female actors are preparing to go out for, but it becomes apparent that they are planning on drinking at presumably a bar or party. As part of getting ready, each of the actors engage in seemingly self-destructive behaviors (for the female version of the video, she vomits in her bathroom sink, rips the outfit that she is wearing, pours wine on her bedroom carpet, and smears her makeup; for the male version of the video, he rips his shirt, tears out an earring he is wearing, bloodies his nose, and smears food across his chest). As each of the male and female actors get ready to leave, the screens blacken and informative text about safe drinking behaviors appeared in the video frame.

To create the high social embarrassment condition, the text tag at the end of the original videos were edited to emphasize social embarrassment. The high social embarrassment condition's tag included the language, "Don't embarrass yourself in front of your friends and others. If you feel dizzy or can't walk in a straight line. Stop drinking for the night. Don't let

yourself lose control. Avoid embarrassing yourself." The low social embarrassment condition used similar language but did not include the text that emphasized feelings of social embarrassment.

Measures

All multiple-item measures were examined for positive contribution of items to scale reliability, item-total correlations, overall scale reliability, and the extent to which the distributions approximated normality and were corrected. The scale means, standard deviations, and alphas for all scales across conditions are presented in Table 1. All scale alphas were within acceptable ranges, except for the attention scale ($\alpha = .63$). All other scales ranged from $\alpha = .7$ through $\alpha = .97$. Sample items for each scale are listed below. All scale items are presented in Appendix A.

Chronic Message Fatigue. The first adapted version of So, Kim, and Cohen's (2017) 17-item seven-point scale 1(*strongly disagree*) to 7 (*strongly agree*) was used as a pretest measure of respondents' baseline perceptions of chronic message fatigue. Individual items included, "*Messages about alcohol are all beginning to sound the same to me*", and "*The importance of drinking responsibly is overtaught.*" Higher scores on the measure indicated greater levels of post-exposure chronic message fatigue. Items for each measurement point were averaged to form a single index and showed excellent reliability ($\alpha = .95$).

Post-exposure Chronic Message Fatigue. A second adapted version of So, Kim, and Cohen's (2017) 17-item seven-point scale 1(*strongly disagree*) to 7 (*strongly agree*) was used as a posttest measure. Specifically, the second time of measurement evaluated participants' perceived chronic message fatigue after exposure to two anti-binge drinking messages. Individual items included, "*Messages about alcohol are all beginning to sound the same to me*",

and "*The importance of drinking responsibly is overtaught*". Higher scores on the measure indicated greater levels of post-exposure chronic message fatigue. Items for were averaged to form a single index and showed excellent reliability (α = .97).

Table 1:
Means, standard deviations, and alphas for all scales

Scale	Mean	SD	α
Chronic Message Fatigue	3.76	1.17	.95
Pre-test Attitudes	4.76	1.53	.89
Injunctive Norms	2.68	1.35	.84
Sensation Seeking	4.06	.84	.84
Baseline Information Seeking	6.49	.6	.70
Reactance	4.06	.84	.79
Perceived Alcohol Risks	4.07	1.35	.71
Perceived Alcohol Benefits	3.33	1.33	.84
Behavioral Intent	2.77	1.44	.90
Post-exposure Chronic Message Fatigue	3.9	1.27	.97
Disgust	5.15	2.29	.91
Anger	6.5	2.16	.91
Humor	5	2.39	.88
Message Sensation Value	3.02	.76	.84
Attention	2.96	1.02	.63
Susceptibility to Social Embarrassment	5.2	1.54	.78
Argument Quality	2.7	1.02	.90
Information Seeking Intentions	4.78	1.38	.82
Novelty	3.5	1.35	.86
Post-test Alcohol Attitudes	4.89	1.56	.90
Counterargument	5.18	1	.71
Character Identification	4.42	1.19	.76

Sensation Seeking. An adapted version of Zuckerman, Eysenck S., and Eysenck B.'s (1978) sensation seeking scale was used. Sensation seeking was assessed using a 18-item seven-point Likert-type scale 1(*strongly disagree*) to 7 (*strongly agree*) with sample items such as, "I like wild 'uninhibited' parties," and "I feel best after taking a couple of drinks." Higher scores on the measure indicated greater levels of sensation seeking. The scale had good reliability (α = .84). All items were averaged to form a single index.

Perceived Message Sensation Value. The study used Palmgreen et al.'s (2002) 17-item seven-point semantic differential scale. Ten of the items in the scale were reverse coded. Sample items included participant perceptions as to whether they thought the stimuli were "Common/ Unique," "Boring/Exciting", and "Unemotional/Emotional." Higher scores indicated greater perceived message sensation value. After transforming items, the scale's reliability was shown to be good ($\alpha = .86$), and all items were averaged to form a single index.

Character Identification. Character identification measures were adapted from Hoeken and Fikkers (2014). For instance, sample items asked the degree to which participants identified (I identified with the person in the ad), experienced feelings (I felt for the person in the ad), and whether they imagined themselves as the character (I imagined what it would be like to be in their position; What happened to the character felt like it happened to me). The four items showed acceptable reliability ($\alpha = .76$).

Attention. The three-item, seven-point Likert-type scale 1(*strongly disagree*) to 7 (*strongly agree*) used to assess attention were taken from So, Kuan, and Cho (2016) and adapted in order to fit the context of the study. Sample items include: "*The message's information about drinking grabbed my attention*," "*While watching the message, I paid a lot of attention to the information about the drinking*," and "*I rushed through the message without being really attentive to the information about drinking*" (reverse-coded). Higher scores on the measure indicated greater levels of attention. The scale showed low reliability ($\alpha = .63$).

In an effort to improve the reliability of the attention measure, several steps were taken. First, it was seen whether deleting individual items would raise the scale's total reliability. However, the scale's reliability only worsened after deleting items. In addition, an exploratory factor analysis was conducted and it was found that the items loaded onto a single factor,

indicating unidimensionality. The magnitude of item communalities was relatively low, which suggests that while the items loaded onto a single factor, they did not load onto it well. Items were averaged together in order to form a single index.

Counterargument. The four item, seven-point Likert-type scale 1(*strongly disagree*) to 7 (*strongly agree*) used to assess participants' counterargument toward the video stimuli were adapted from Nabi, Moyer-Gusé, & Byrne (2007). Sample items include: "I found myself looking for flaws in the message presented," and "I found myself thinking of ways I disagreed with what was being presented." Higher scores on the measure indicated greater levels of counterargument. Items were averaged together in order to form a single index. The items were shown to have acceptable reliability ($\alpha = .71$).

Baseline Information Seeking. Information seeking intentions was measured in the pre-test and was assessed using a 3-item 7-point Likert-type scale, 1(*strongly disagree*) to 7 (*strongly agree*). The pre-test measurement assessed participant's baseline information seeking behaviors. The items were adapted from Niederdeppe et al. (2007), and were changed to better fit the context of the study. The items assessed the extent to which the participants already made active efforts to obtain information about safe drinking practices from doctors, peers, or Internet sources. The scale was found to be reliable ($\alpha = .70$). The items were averaged to form a single index.

Information Seeking Intentions. Information seeking intentions was measured in the post-test and was assessed using a 3-item 7-point Likert-type scale, 1(*strongly disagree*) to 7 (*strongly agree*). The post-test measurement evaluated the degree to which participants intended to seek out information in the future. The items were adapted from Niederdeppe et al. (2007), and were changed to better fit the context of the study. The items assessed the extent to which the

participants intended to make active efforts to obtain information about safe drinking practices from doctors, peers, or Internet sources. The scale was found to be reliable (α = .82). Items were averaged together in order to form a single index.

Perceived Argument Quality. Perceived argument quality was measured with six-items that were adapted from Kang, Cappella, and Fishbein (2006). Respondents indicated the perceived quality of each PSA's arguments on a five-point Likert-type scale, which ranged from 1(*disagree*) to 5 (*agree*). Respondents evaluated the extent to which each argument was convincing, strong, believable, important, made them feel confident to drink responsibly, and elicited agreement from them. Higher scores on the measure indicated greater levels of perceived argument quality. The items in the scale were shown to be reliable (α = .90). Items were averaged together in order to form a single index.

Alcohol Risks. Perceived alcohol risk was assessed using three-item 7-point Likert-type scale that ranged from 1(*strongly disagree*) to 7 (*strongly agree*). Scale items included: "If I had five drinks in an evening I would react badly," and "The consequences of my drinking would be a problem for me." Items in the scale were averaged to form a single index and showed acceptable reliability (α = .71).

Alcohol Benefits. Perceived alcohol benefits were assessed using a five-item 7-point Likert-type scale that ranged from 1(*strongly disagree*) to 7 (*strongly agree*). Scale items included: "If I had five drinks in an evening I would be more outgoing," "Drinking helps you have more fun on a date," and "Drinking alcohol makes a party more fun." Items in the scale were averaged to form a single index and showed good reliability (α = .86).

Trait Reactance. Trait reactance was measured using Hong and Faedda's (1996) psychological reactance scale, which consisted of 11 7-point Likert-type scale items. The scale

ranged from 1(*strongly disagree*) to 7 (*strongly agree*) with high scores indicating higher levels of reactance. Scale items included: "I find contradicting others stimulating," "Regulations trigger a sense of resistance in me," and "I resist the attempts of others to influence me." The scale was shown to be reliable (α = .79). Items were averaged together in order to form a single index.

Social Embarrassment. Social embarrassment was assessed with a three-item, 7-point Likert-type scale, which ranged from 1(*strongly disagree*) to 7 (*strongly agree*) with higher scores indicating higher social embarrassment susceptibility. The scale items were: "*I feel very upset when I commit some social error,*" "*I am unconcerned even if I know people are forming an unfavorable impression of me*," and "*I worry about what people will think of me even when I know it doesn't make any difference*." The scale was adapted from the Susceptibility to Social Embarrassment Scale (Kelly & Jones, 1997). The scale showed good reliability (α = .78). Items in the scale were averaged to form a single index.

Injunctive Norms. Injunctive norms towards binge drinking were assessed using three 7-point Likert-type items. The scale ranged from 1(*strongly disagree*) to 7 (*strongly agree*) with higher scores indicating higher injunctive norms towards binge drinking. Scale items included: "*It is okay in the group I hang out with the most to have a drink or two*," "*It is okay in the group I hang out with the most to have a few drinks or beers and get a little drunk*," and "*It is okay in the group I hang out with the most to have a number of drinks and get really drunk*." Items in the scale were averaged to form a single index and showed good reliability (α = .84).

Anger. Respondents self-reported their affective experience through a series of four 10-point items anchored at one end by a single word referencing some affective state (Dillard, Kinney, & Cruz, 1996). Participants were asked to rate their experienced anger, annoyance, aggravation, and irritation. Items were averaged together to form a single index. The scale

ranged from 0 = “None of this feeling” to 9 = “A great deal of this feeling” and showed high reliability, α = .91.

Disgust. Disgust was measured with three 10-point items that were adapted from Buck, Khan, Fagan, and Coman’s (2018) user affective experience scale. Participants were asked to rate how repulsed, disgusted, and nauseated viewing the videos made them feel. The scale ranged from 0 = “None of this feeling” to 9 = “A great deal of this feeling” and showed high reliability (α = .91).

Humor. Humor was assessed using a 4-item semantic differential scale. Items were adapted from Nabi, Moyer-Gusé, & Byrne (2007). Sample items included, “Overall, I thought the videos were humorous/not humorous,” “Overall, I thought the videos were amusing/not amusing,” and “Overall, I thought the videos were funny/not funny.” The scale showed good reliability (α = .88).

Novelty. Respondents will be asked to complete five 7-point Likert-type items adapted from Chen, Darst, and Pangrazi (1999). The scale ranged from 1(*strongly disagree*) to 7 (*strongly agree*) with higher scores indicating greater perceived message novelty. Scale items included: “This argument is unusual,” “I have never seen this argument before,” and “This argument is new to me.” The scale showed high reliability (α = .86). Items were averaged together in order to form a single index.

Attitudes. Attitudes towards binge drinking were assessed at both pre-test and post-test using three 7-point Likert-type items. For both the pre and posttest version of the scale, items ranged from 1(*strongly disagree*) to 7 (*strongly agree*) with higher scores indicating greater attitudes towards binge drinking. Scale items included: “*I like binge drinking*,” “*Binge drinking*

is fun," and "*Binge drinking is good*." Items in the scale were averaged to form a single index and showed good reliability at both pretest (α = .89) and posttest (α = .90) measurement.

Behavioral Intent. Respondents' perceived likelihood to binge drink was assessed with three-item, five-point Likert type scale that was modified from the speed compliance scale used by Elliott, Armitage, & Baughan (2003). The scale ranged from 1to 5 with higher scores indicating stronger intent to binge drink. The three items were "Do you intend to binge drink in the next 3 months?" (definitely do not to definitely do), "How much do you want to binge drink in the next 3 months?" (not at all to very much), and "How likely or unlikely is it that you will binge drink in the next 3 months?" (unlikely to likely). The reliability of the scale was shown to be high (α = .90). Items were averaged together in order to form a single index.

Demographic and Control Variables. In addition to the above, participants were asked about their identified gender, age, year in school, socio-economic status, racial and ethnic background, and their previous experience with alcohol. To measure previous alcohol experience, participants were asked a series of *1 =Yes* or *0= No* that included the following items: "*Have you ever consumed alcohol?," "Do you like drinking?," "Have you ever had 5 or more drinks in one sitting?,"* and *"Have you ever been convicted of a DUI?"*

Survey Attention Checks. Two separate attention checks were included in the main study questionnaire. Each attention check consisted of a 7-point Likert-type that ranged from 1(*strongly disagree*) to 7 (*strongly agree*) and instructed respondents to answer the items in specific ways. For the first attention check, respondents were instructed to select "strongly agree." Similarly, the second attention check asked respondents to select "disagree." Failure to complete the attention checks, or, answering the attention check incorrectly resulted in data from 47 participants being excluded from data analysis.

Knowledge Check. In addition, participants were asked to complete a knowledge check to insure that they paid sufficient details to the stimulus materials. The knowledge check asked participants to complete a yes or no question: *"*In the video featuring the female actress, was there a bottle of wine present?" Failure to complete the knowledge check, or, answering the knowledge check incorrectly resulted in data from 73 participants being excluded from data analysis.

Manipulation Check: Participants were asked a single item to assess the study's experimental manipulation. The item was: "The video made me feel worried about looking foolish to others." The item ranged from 1(*strongly disagree*) to 7 (*strongly agree*).

CHAPTER 4:

Results

The first set of hypotheses posited that reactance (H1a), sensation seeking (H1b), previous drinking behavior (H1c), and baseline attitudes towards alcohol consumption (H1d) would predict baseline feelings of chronic message fatigue. To test the hypotheses, a multiple regression was performed, controlling for the effects of experimental condition and gender. The results of the analysis showed that reactance (β = .25, p = .002) and sensation seeking (β = .24, p = .012) significantly predicted chronic message fatigue, which supported both H1a and H1b. Previous drinking behavior (β = -.10, p = .284) and baseline alcohol consumption attitudes (β = -.03, p = .734) were not predictive of chronic message fatigue, F (6, 167) = 6.371, p = .001, 95% CI = .214— 2.657). See Table 2.

The second set of hypotheses proposed that participants' post-exposure chronic message fatigue would predict their post-exposure attitudes (H2a), their information seeking intentions (H2b) and their behavioral intent to binge drink (H2c). To test the hypotheses, a series of multiple regressions were performed, controlling for the effects of participants' baseline feelings of fatigue, the experimental condition, and for gender. The results of the analyses indicated that participants' post-exposure chronic message fatigue predicted their post-exposure alcohol attitudes (β = .16, F (3, 154) = 2.488, p = .048, 95% CI = .004— .758) and their information seeking intentions (β = -.19, F (3, 150) = 2.232, p = .019, 95% CI = -.749— -.067), which offered support for hypotheses H2a and H2b. Post-exposure chronic message fatigue did not predict binge drinking behavioral intent (β = .07, F (3, 169) = 6.371, p = .254, 95% CI = -.182— .504), *n.s*. See Table 3.

The first research question inquired about the predictive effect of different forms of message evaluation on changes in perceived chronic message fatigue. To test the research question, a series of multiple regressions were performed, controlling for the effect of baseline chronic message fatigue, experimental condition, and gender. The results of the analysis showed that message sensation value (β = -.10, F (4, 54) = 72.685, p = .072, 95% CI = -.332— .015), anger (β = .02, F (4, 70) = 96.621, p = .702, 95% CI = -.043— .063), and character identification (β = -.05, F (4, 168) = 132.755, p = .167, 95% CI = -.137— .024) were not significantly predictive of changes in perceived chronic message fatigue. Meanwhile, the analysis showed that perceived argument quality (β = -.15, F (4, 153) = 136.951, p < .001, 95% CI = -.285— -.092), message novelty (β = -.09, F (4, 149) = 128.372, p = .026, 95% CI = -.154— -.010), counterargument (β = .10, F (4, 152) = 136.244, p = .015, 95% CI = .025— .230) and attention (β = -.16, F (4, 169) = 155.349, p < .001, 95% CI = -.281— -.101) significantly predicted changes in perceived chronic message fatigue. See Table 4.

Table 2: *Multiple Linear Regression Analysis for Baseline Chronic Message Fatigue Predicted by Reactance, Sensation Seeking, Drinking Frequency, and Attitudes.*

	Baseline Chronic Message Fatigue			
	β	*t*	*SE*	*p*
Reactance	.25	3.157	.11	.002
Sensation Seeking	.24	2.554	.13	.012
Drinking Behavior	-.10	-1.076	.10	.284
Baseline Attitudes	-.03	-.032	.07	.734
Gender	.09	1.333	.17	.184
Condition	-.08	-1.12	.17	.264

Table 3:
Summary of Multiple Linear Regression Analysis for Change in Chronic Message Fatigue Predicting Post-exposure Alcohol Attitudes, Information Seeking Intentions, and Behavioral Intent

	Alcohol Attitudes				Information Seeking Intentions				Behavioral Intent			
	β	*t*	*SE*	*p*	*β*	*t*	*SE*	*p*	*β*	*t*	*SE*	*p*
Post-exposure Fatigue	.17	2.088	.19	.038	-.21	-2.580	.17	.011	.09	1.137	.17	.257
Baseline Fatigue	.08	.932	.11	.353	-.12	-1.5	.10	.136	.13	1.646	.09	.102
Gender	.09	.905	.25	.367	-.03	-.322	.23	.748	-.06	1.364	.22	.269
Condition	-.10	-1.081	.25	.281	.02	.291	.22	.772	-.09	-.997	.22	.462

The third group of hypotheses were concerned with differences between males and females on perceived benefits of drinking alcohol (H3a), perceived risks of drinking alcohol (H3b), and alcohol drinking frequency (H3c). To analyze each version of hypothesis two, independent samples t-tests were conducted. For hypothesis 3a, the t-test showed that females (M = 3.4, SD =1.35) and males (M = 3.15, SD =1.34) did not have significantly different perceived

Table 4: *Summary of Multiple Linear Regression Analysis for Variables Predicting Post-exposure Chronic Message Fatigue*

	Post-exposure Chronic Message Fatigue			
	β	*F*	*SE*	*p*
Message Sensation Value	-.10	72.685	.08	.072
Anger	.02	96.621	.03	.702
Character Identification	-.05	132.755	.04	.167
Perceived Argument Quality	-.15	136.951	.05	.001
Novelty	-.09	128.372	.03	.026
Counterargument	.10	136.244	.05	.015
Attention	-.16	155.349	.05	.001

alcohol benefits, $t(187) = -1.242$, $p = .216$, 95% *CI* =-.649—.147, *n.s*. For hypothesis 3b, the analysis showed that females ($M = 3.85$, $SD = 1.36$) had significantly fewer perceived alcohol-related risks than males ($M = 4.45$, $SD = 1.36$), $t(189) = 2.998$, $p = .003$, 95% *CI* =.205-.998. While this analysis showed a significant effect, the effect was in the opposite direction from what was hypothesized. Thus, hypothesis 3b was not supported. Hypothesis 3c posited that males would drink alcohol more frequently than females. The t-test showed that there was no difference between female ($M = 3.37$, $SD = .98$) and male ($M = 3.35$, $SD = 1.09$) alcohol drinking frequency, $t(191) = -.151$, $p = .880$, 95% *CI* =-.325—.279, *n.s*.

The second research question inquired about the relationship that exposure to a social embarrassment message had with character identification. To test the relationship, an independent samples t-test was conducted to conclude whether there was a relationship between the constructs. The results indicated that there was no difference between those in the social embarrassment ($M = 4.24$, $SD = 1.16$) and non-social embarrassment conditions ($M = 4.57$, $SD = 1.20$), regarding their identification with the message characters, $t(191) = 1.904$ $p = .058$, *n.s.*

Hypothesis 4a was an induction check for the social embarrassment message conditions, and was performed using an ANOVA. To determine if participants who viewed the social embarrassment-eliciting message were more concerned with becoming publicly embarrassed following viewing the message than participants viewing the non-social embarrassment eliciting message. After controlling for the effect of gender, it was found that there was no difference between those exposed to the social embarrassment message ($M = 6.13$, $SD = 2.14$) versus those exposed to the non-social embarrassment message ($M = 5.97$, $SD = 2.01$), $F(3, 98) = .137$, $p = .712$, *n.s.*

Hypothesis 4b stated that participants in the social embarrassment message condition would perceive greater risks associated with alcohol consumption than those in the non-social embarrassment condition. An independent samples t-test was conducted to assess whether there were group differences. Results showed that participants in the social embarrassment message condition ($M = 4.05$, $SD = 1.26$) and non-social embarrassment condition ($M = 4.08$, $SD = 1.42$, $t(190) = .112$ $p = .903$) did not significantly differ, *n.s.*

Hypothesis 4c posited that participants in the two experimental conditions would differ in terms of their perceived benefits associated with alcohol consumption. An independent samples t-test was conducted and indicated that participants in the social embarrassment message condition ($M = 3.07$, $SD = 1.19$) were significantly less likely than those in the non-social

Table 5: *Summary of Multiple Linear Regression Analysis for Variables Predicting Post-exposure Chronic Message Fatigue*

	Post-exposure Chronic Message Fatigue			
	β	*t*	*SE*	*p*
Sensation Seeking	.37	4.945	.12	.037
Novelty	-.16	-2.108	.07	.001
Sensation Seeking by Novelty Interaction	.14	1.825	.10	.070

embarrassment condition ($M = 3.55$, $SD = 1.40$) to have alcohol consumption-related benefits, $t(188) = 2.522$ $p = .012$, which offered support for hypothesis 4c.

Hypothesis 5a and hypothesis 5b predicted correlational relationships of trait sensation seeking. Specifically, H5a stated that sensation seeking would be negatively associated with

perceived alcohol risk, while H5b posited that sensation seeking would be positively correlated with perceived alcohol benefits. Correlational analysis showed that there was a weak, negative correlation between sensation seeking with perceived risk, r = -.22, p = .001, and a strong, positive correlation with perceived benefits, r = .64, p = .001, which provides support for both H5a and H5b.

Hypothesis 6a stated that sensation seeking would moderate the relationship between novelty and post-exposure chronic message fatigue, such that high sensation seekers will experience less fatigue if exposed to novel messages. To analyze the hypothesis, a multiple linear regression, controlling for the effects of gender and experimental condition, was performed. The results indicated that both sensation seeking (β = .32, p = .001) and perceived novelty (β = -.16, p = .001) were individually predictive of post-exposure chronic message fatigue, but the interaction of sensation seeking and novelty (β = .14) was not significant, R^2 = .16, F (5, 148) = 7.009, p = .076, 95% CI = -.019— .379, thus rejecting hypothesis 6a.

Hypothesis 6b proposed that sensation seeking would moderate the relationship between novelty and attention, such that high sensation seekers will pay more attention to messages perceived as novel. To analyze the hypothesis, a multiple linear regression, controlling for the effects of gender and experimental condition, was performed. The results indicated that the main effect of sensation seeking (β = -.14, p = .077) on attention was not significant. There was however a significant main effect of perceived novelty (β = .21, p = .005) and a significant interaction of sensation seeking and perceived novelty (β = -.17) on attention, R^2 = .16, F (5, 148) = 7.009, p = .076, 95% CI = -.019— .379, thus supporting hypothesis 6b. The graph of the interaction is presented in Figure 1. See Table 6 for regression results.

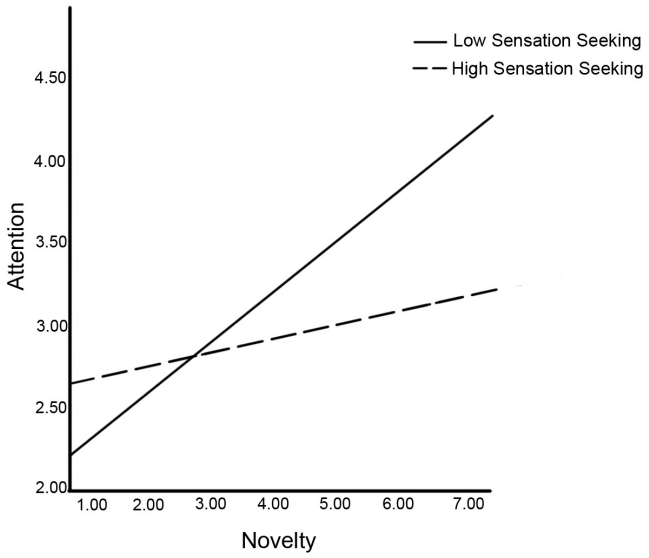

Figure 1: Sensation by Novelty Interaction

Hypothesis 7a predicted that perceived message sensation value would have a negative relationship with perceptions of post-exposure chronic message fatigue. To test the hypothesis, a bivariate correlation was conducted. The analysis showed that there was a negative moderate relationship between the two variables, r = -.29, p = .019, which supported hypothesis 7a.

Table 6: *Summary of Multiple Linear Regression Analysis for Moderation Analysis*

	Attention			
	β	*t*	*SE*	*p*
Sensation Seeking	-.14	-2.612	.06	.077
Novelty	.21	3.134	.09	.010
Sensation Seeking by Novelty Interaction	-.17	-2.587	.07	.022

Table 7: *Summary of Multiple Linear Regression Analysis for Moderation Analysis*

	Counterargument			
	β	*t*	*SE*	*p*
Sensation Seeking	.39	3.595	.11	.001
Message Sensation Value	-.42	-3.864	.13	.001
Sensation Seeking by Message Sensation Value Interaction	.05	.482	.10	.632

The third research question inquired about the relationship of sensation seeking and counterargument formation. A bivariate correlation analysis was conducted and indicated that there was a moderate, positive correlation, $r = .34$, $p = .001$.

Hypothesis 7b stated that perceived message sensation value would moderate the relationship between sensation seeking and counterargument. A multiple linear regression was performed to analyze the hypothesis. The results indicated that both perceived message sensation value ($\beta = -.43$, $p = .001$) and sensation seeking ($\beta = .38$, $p = .001$) were individually predictive of counterargument formation, but the interaction ($\beta = .05$) of the two variables was not significant, $R^2 = .36$, $F\ (3, 54) = 11.631$, $p = .632$, 95% $CI = -.227$— .371, thus rejecting hypothesis 7b. See Table 7.

Hypothesis 8a stated that women would be more susceptible to disgust than men. To test the predicted relationship, an independent samples t-test was performed. The results showed that there were no significant differences between males ($M = 5.62$, $SD = 1.98$) than females ($M = 4.89$, $SD = 2.41$), $t\ (126) = 1.791$ $p = .076$, rejecting hypothesis 8a.

This, along with the second set of hypotheses, was surprising. In order to further explain this finding, a series of post-hoc analyses was conducted. It was found that females ($M = 4.18$,

SD = .81) in the sample were significantly more likely than males (*M* = 3.83, *SD* = .81) to be high in sensation seeking, *t* (182) = -2.789, *p* = .006, and that males (*M* = 5.74, *SD* = 1.36) were more prone than females (*M* = 4.84, *SD* = 1.54) to be susceptible to social embarrassment, *t* (129) = 3.414, *p* = .001.

Hypothesis 8b and hypothesis 8c proposed that feelings of disgust would positively correlate with feelings of anger and would negatively correlate with participants' drinking frequency, respectively. Correlational analyses showed that there was a moderate, positive correlation between disgust and anger, *r* = .49, *p* = .001, and a weak, negative correlation between disgust and drinking frequency, *r* = -.20, *p* = .022, which offered support for both hypothesis 8b and 8c.

Hypothesis 9a and hypothesis 9b proposed that feelings of humor would negatively correlate with counterargument formation and perceived chronic message fatigue, respectively. Correlational analyses showed that there was a weak, negative correlation feelings of humor and counterargument formation, *r* = -.16, *p* = .05, and no relationship between feelings of humor and message fatigue, *r* = -.13, *p* = .10, which offered support for hypothesis 9a, but not for 9b.

Table 8: *Summary of Intercorrelations*

		1	2	3	4	5	6	7	8	9	10	11	1
1	Manipulated Social	—											
2	Gender	.05	—										
3	Baseline Fatigue	-.16*	.14	—									
4	Post-exposure fatigue	-.13	.18*	.87***	—								
5	Drinking Frequency	-.13	.02	.01	.03	—							
6	Character Identification	-.14	-.08	.03	-.10	.25***	—						
7	Humor	.04	.11	-.10	-.13	.02	.20**	—					
8	Disgust	.01	-.18*	-.02	-.03	-.20*	-.05	.01	—				
9	Anger	.05	-.04	.20	.25*	-.14	-.17	-.35**	.50***	—			
10	Novelty	-.1	-.13	-.07	-.17*	.07	.27***	.27***	.07	-.09	—		
11	Social Embarrassment	-.09	-.29***	.05	.06	.01	.16	-.07	.24*	.17	.16	—	
12	Argument Quality	-.02	-.24**	-.20*	-.32***	-.05	.25***	.31***	.22*	-.11	.31***	.39***	–

Table 8 continued

		1	2	3	4	5	6	7	8	9	10	11
13	Counterargument	.05	.33***	.15	.26***	-.16*	-.05	-.16*	-.19*	.14	-.28***	-.33***
14	Alcohol Benefits	-.18*	.11	.26***	.28***	.47***	.26***	.14	-.09	-.01	.03	.11
15	Alcohol Risks	-.01	-.20**	-.01	-.06	-.32***	.12	-.06	.23**	.14	.22**	.25**
16	Reactance	-.09	.10	.34***	.40***	.04	-.04	-.01	.08	.19	.01	.01
17	Message Sensation Value	-.02	-.35**	-.17	-.29*	.10	.28*	.30*	.07	-.15	.36**	.35*
18	Sensation Seeking	-.25***	.23**	.33***	.33***	.44***	.27***	.01	-.10	.07	.08	.02
19	Attention	.04	-.17*	-.29***	-.38***	-.04	.15*	.24**	.27**	-.23*	.25***	.24**
20	Injunctive Norms	-.02	.02	.08	.08	.42***	.17*	.03	-.13	-.06	.10	.00
21	Information Seeking	.07	.09	-.10	-.12	.17*	.19**	-.16*	-.02	-.18	.03	-.14
22	Information Seeking Intentions	-.01	-.09	-.10	-.20**	.12	.25***	.10	.07	-.03	.10	-.14
23	Baseline Attitudes	-.12	.08	.15*	.18*	.58***	.25***	.06	.14	-.02	.20**	.00
24	Post-exposure Attitudes	-.11	.13	.09	.17*	.60***	.21**	.06	.15	-.22	.06	-.10
25	Behavioral Intent	-.10	.11	.14	.12	.66***	.27***	-.01	-.17	-.14	.05	-.01

Table 8 continued

	13	14	15	16	17	18	19	20	21	22	23	24
Alcohol Benefits	.17*	—										
Alcohol Risks	-.28***	-.39***	—									
Reactance	.24***	.26***	.05	—								
Message Sensation Value	-.50***	-.02	.04	-.15	—							
Sensation Seeking	.34***	.64***	-.22**	.41***	-.17	—						
Attention	-.37***	-.12	.12	-.21**	.51***	-.15*	—					
Injunctive Norms	.05	.51***	-.28***	.15*	.02	.45***	-.02	—				
Information Seeking	.11	.08	-.07	-.02	.05	-.02	.04	.05	—			
Information Seeking Intentions	-.02	-.03	.14	-.12	.05	.02	.22**	-.07	.35***	—		
Baseline Attitudes	.19*	.64***	-.40***	.21**	-.01	.54***	-.16*	.50***	.00	-.12	—	
Post-exposure Attitudes	.24**	.61***	-.44***	.20**	-.02	.57***	-.16*	.50***	.08	-.08	.88***	—
Behavioral Intent	.22**	.60***	-.39***	.12	.01	.59***	-.10	.59***	.05	-.06	.71***	.74***

CHAPTER 5:

Discussion, Limitations, and Future Research

Despite its relevancy, the implications of chronic message fatigue responses on the efficacy of health messages remain largely unaddressed in the literature. This study sought to expand the theoretical knowledge of message fatigue by identifying variables that were associated with the construct. To test these objectives, a series of multiple regressions were performed that 1) determined different personality attributes and behaviors that predicted baseline feelings of chronic message fatigue, 2) the predictive effect of changes in perceived message fatigue on behavioral outcomes, and 3) forms message of evaluation that both positively and negatively predicted feelings of fatigue.

Results indicate that reactance and sensation seeking positively predicted feelings of chronic message fatigue. In particular, psychological reactance was the strongest predictor of fatigue, which signifies a need for tailored health messages that will not trigger reactant responses. Snyder et al. (2004) categorized health messages into one of three groups: 1) messages that emphasized the prevention of an undesirable behavior, 2) the commencement of a new behavior, and 3) the cessation of an old, undesirable behavior. Our results suggest that message designers should avoid framing their messages as the last of these three appeals as it could be viewed as an impingement of personal freedoms, which would trigger reactant responses and then lead to greater levels of fatigue.

Like reactance, sensation seeking was also shown to significantly predict chronic message fatigue responses. Sensation seeking is a trait that has long been studied in the health literature for sensation seekers' propensity to engage in unhealthy behaviors (Donohew, Lorch,

& Palmgreen, 1991; Hittner & Swickert, 2006). The results of this study further support the need for health messages that can effectively reach sensation seekers.

An interesting finding of the study was that neither past drinking behaviors or baseline attitudes towards alcohol consumption were predictive of perceived chronic message fatigue. This contrasts So and Popova (2018) who found that people that engaged in the targeted health behavior (in this case smoking) were more likely to experience fatigue than people that did not. The differences in the present study's findings suggest that fatigue is contextually associated with health behaviors. That is, people who engage in different health behaviors may exhibit varying levels of fatigue. This insight is one that is not fully developed, however. Additional research is needed in order to assess which health behaviors chronic message fatigue is most closely associated with. By further developing profiles of fatigued individuals across different health behaviors, researchers can identify which health behaviors will be most likely to elicit fatigue responses.

While baseline feelings of fatigue were not associated with measures of attitudes and drinking behaviors, there was evidence that changes in perceptions of fatigue were predictive of both alcohol consumption attitudes and information seeking intentions. Though changes in fatigue responses were not associated with behavioral intent to binge drink, it has been well documented that attitudes are closely associated with both behavioral intent and behavior (Ajzen, 1985, 1991). The results of this study also support this from the large correlation between alcohol consumption attitudes and behavioral intent (e.g., see Table 8). This suggests that there is an indirect path of change in message fatigue to attitude formation to behavioral intent.

Moreover, the last primary objective of the study was to assess which forms of message evaluation were predictive (both positively and negatively) of change in message fatigue.

Attention, perceived argument quality, and perceived message novelty negatively predicted fatigue, while counterargument was shown to be a positive predictor. These results further substantiate the conceptualization of fatigue as a form of motivated resistance to persuasive messages.

The men and women that took part in the study were peculiar in that they defied traditional gender norms. Previous literature suggests that men traditionally have more favorable views towards alcohol consumption than women (Nolen-Hoeksema, 2004). However, our data suggested that these findings were reversed in that females had fewer perceived alcohol-associated risks than males and did not significantly differ regarding alcohol consumption or perceived alcohol-related benefits. These results were surprising. In order to further explain these findings, a series of post-hoc analyses were conducted which found that the females that took part in the study were more likely to be high sensation seekers than males. Other literature has noted that sensation seeking is consistently associated with risk-taking behaviors and is related to alcohol consumption (Hittner & Swickert, 2006), which was also supported by this study's findings. Sensation seeking was the driving force behind the discrepancies in the results of this study and past literature.

In addition, males were more likely than females to be susceptible to disgust than females. This contrasted previous literature that suggests women are more sensitive to disgust appeals than men (Olatunji et al., 2007; Templer, King, Brooner, & Corgiat, 1984). According to Nabi (1999), feelings of disgust promote the action tendency separate oneself from the disgust-eliciting object, which can include disgusting concepts or ideas (e.g., thinking of rotten food), disgust caused from others (i.e., a sick person), or disgust felt towards oneself. For people who are the cause the disgust response, one will have the natural inclination to socially ostracize the

cause of the disgust. Feelings of self-disgust can be explained by susceptibility to feelings of social embarrassment in that disgust itself is a prosocial emotion (Buck, 2014). Feelings of disgust influence how individuals interact with one another. A post-hoc analysis showed that men were more likely to be susceptible to social embarrassment, which was also closely related to disgust sensitivity. These results suggest that since the study's male population was more susceptible to social embarrassment than the female population, they were more concerned with others perceiving them as disgusting after binge drinking.

Another interesting finding was that social embarrassment message exposure was associated with a reduction in associated benefits of alcohol consumption, but was not associated with an increase in perceived alcohol consumption risk. Drinking is largely considered a social activity. By framing the socialness of drinking as a potentially harmful or negative activity, participants' associated benefits of alcohol consumption were subsequently decreased. While social embarrassment message exposure was not associated with perceived alcohol consumption risks, this could be explained by the risks that are commonly connected to alcohol consumption. For instance, research has noted that when drinking females tend to adopt defensive behaviors so that they are less likely to be sexually victimized by males (Nolen-Hoeksema, 2004). Other commonly thought of risks include, but are not limited to the physical repercussions of binge drinking (i.e., experiencing a hangover or alcohol poisoning) or associated legal issues (i.e., underage drinking, getting arrested). It is possible that social embarrassment was thought of as hazard to the perceived benefits of alcohol consumption while simultaneously being unassociated with the inherent risks of the behavior.

The study's induction check indicated that the experimental manipulation failed. However, the effect size of the experimental manipulation on various variables within the study

was close in size to the average effect sizes of other mass media effects research (Preiss, 2007). Given that effect size is a better estimate of effectiveness than statistical testing (Ellis, S. M., & Steyn, 2003), the study's experimental manipulation was determined to be acceptable.

For all regression analyses, the experimental condition and gender were controlled for. Separate analyses were also conducted without the presence of these factors and there was very little change in the results.

Limitations

This study was not without its limitations. First, the study suffered from an insufficient amount of power. With only 193 participants after data cleaning, the study lacked the necessary power to observe smaller effects. For instance, correlation analysis showed that feelings of fatigue and behavioral intent to binge drink were weakly and positively correlated, but the relationship was not significant. Have a more robust sample size would have better accounted for possible type two errors.

Second, while the objective of this study was to determine additional factors that were associated with message fatigue, the study itself did not experimentally manipulate feelings of fatigue. While preeminent research on symptoms of fatigue indicated that it could occur in as little as three exposures (Belch, 1981), no research has explicitly attempt to induce feelings of fatigue. This, however, does offer an avenue for future research to pursue.

This study also did not analyze the sub-dimensions of message fatigue. So, Kim, and Cohen (2017) found that fatigue is multidimensional, consisting of: overexposure, tedium, redundancy, and exhaustion. Future research should analyze how these associations are related to other factors such as sensation seeking and reactance in order to determine which specific component of message fatigue most strongly relate to these, as well as other factors.

Conclusions

The present study found that feelings of chronic message fatigue towards alcohol messages are associated with attitudes towards alcohol consumption. To adequately account for the negative impact that perceived fatigue could have on the efficacy of persuasive health messages, it is integral that message designers utilize high-quality, novel messages for health campaigns and interventions. With the growingly saturated health message environment, future research should continue to investigate ways to reduce feelings of fatigue and under which contexts fatigue responses are directly associated with health behaviors.

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APPENDIX A

Scales and Measurement Items

Demographic and Control variables:

- What is your age?
- Which gender do you identify as?
- What is your racial or ethnic background?
- What is your sexual orientation?
- What is your marital status?
- What is your educational background?
- What is your employment status?
- What is your household's yearly income?
- Have you ever tried drinking alcohol?
- How frequently do you drink alcohol?

Pretest Attitudes towards Binge Drinking

- I like binge drinking.
- Binge drinking is fun.
- Binge drinking is good.

Injunctive Norms

- It is okay in the group I hang out with the most to have a drink or two.
- It is okay in the group I hang out with the most to have a few drinks or beers and get a little drunk
- It is okay in the group I hang out with the most to have a number of drinks and get really drunk.

Sensation Seeking

- I like wild "uninhibited" parties.
- I often like to get high drinking alcohol or smoking marijuana.
- I like to have new and exciting experiences and sensations even if they arc a little unconventional or illegal.
- I like to date people who are physically attractive.
- Keeping the drinks full is the key to a good party.
- A person should have considerable sexual experience before marriage.
- I enjoy watching many of the "sexy" scenes in movies.
- I feel best after taking a couple of drinks.
- I can't stand watching a movie that I've seen before.
- I get bored seeing the same old faces.
- When you can predict almost everything a person will do and say, he or she must be a bore.
- I usually don't enjoy a movie or a play where I can predict what will happen in advance.
- Looking at someone's travel pictures bores me tremendously.
- I prefer friends who are excitingly unpredictable.
- I get very restless if I have to stay around home for any length of time.
- The worst social sin is to be a bore.

- I like people who are sharp and witty even if they do sometimes insult others.
- I have no patience with dull or boring people.

Baseline Information Seeking

- How frequently do you look up information about drinking safely from the Internet?
- How frequently do you ask a doctor about drinking safely?
- How frequently do you ask a friends or family members about drinking safely?

Psychological Reactance

- Advice and recommendations induce me to do just the opposite.
- When something is prohibited, I usually think "that's exactly what I'm going to do."
- I become frustrated when I am unable to make free and independent decisions.
- I resist the attempts of others to influence me.
- Regulations trigger a sense of resistance in me.
- I find contradicting others stimulating.
- It irritates me when someone points out things that are obvious to me.
- When someone forces me to do something, I feel like doing the opposite.
- It makes me angry when another person is held up as a model for me to follow.
- I consider advice from others to be an intrusion.
- I become angry when my freedom of choice is restricted

Chronic Message Fatigue

- Drinking-related messages are tedious.
- I find messages about drinking to be dull and monotonous.
- Health messages about drinking are boring.
- Drinking messages make me want to yawn.
- Drinking-related messages make me want to sigh.
- I am tired of hearing about the importance of drinking responsibly.
- I am sick of hearing about consequences of getting drunk.
- I am burned out from hearing that getting drunk is a serious problem.
- I can predict what a message about drinking is going to say.
- Messages about drinking are all beginning to sound the same to me.
- At this point, I've heard about problems related to drinking more than I ever needed to.
- I have heard enough about how important it is to drink responsibly.
- There are simply too many health messages about drinking.
- The importance of drinking safely is overtaught.
- Drinking-related messages rarely provide new information.
- After hearing them for years, messages about drinking seem repetitive.

Behavioral Intent

- Do you intend to binge drink in the next 1 month?
- How much do you want to get drunk in the next 1 month?
- How likely or unlikely is it that you will binge drink in the next 1 month?

Post-exposure Chronic Message Fatigue

- Drinking-related messages are tedious.
- I find messages about drinking to be dull and monotonous.
- Health messages about drinking are boring.
- Drinking messages make me want to yawn.

- Drinking-related messages make me want to sigh.
- I am tired of hearing about the importance of drinking responsibly.
- I am sick of hearing about consequences of getting drunk.
- I am burned out from hearing that getting drunk is a serious problem.
- I can predict what a message about drinking is going to say.
- Messages about drinking are all beginning to sound the same to me.
- At this point, I've heard about problems related to drinking more than I ever needed to.
- I have heard enough about how important it is to drink responsibly.
- There are simply too many health messages about drinking.
- The importance of drinking safely is overtaught.
- Drinking-related messages rarely provide new information.
- After hearing them for years, messages about drinking seem repetitive.

Anger

- After watching the message, I felt angry.
- After watching the message, I felt annoyed.
- After watching the message, I felt aggravated.
- After watching the message, I felt irritated.

Disgust

- After watching the message, I felt repulsed.
- After watching the message, I felt disgusted.
- After watching the message, I felt nauseated.

Attention

- The message's information about drinking grabbed my attention.
- While watching the message, I paid a lot of attention to the information about the drinking.
- I rushed through the message without being really attentive to the information about drinking.

Argument Quality

- I thought the arguments were convincing
- I thought the arguments were important
- I thought the arguments were strong
- I thought the arguments were believable
- I thought the arguments made them feel confident to drink responsibly
- I agreed with the arguments that the messages made

Social Embarrassment

- I worry about what people will think of me even when I know it doesn't make any difference.
- I become tense and jittery if I know someone is sizing me up.
- I am unconcerned even if I know people are forming an unfavorable impression of me.
- I feel very upset when I commit some social error.

Information Seeking Intentions

- In the future, do you intend to look up information about safe drinking practices from the Internet?
- In the future, do you intend to ask a doctor about safe drinking practices?

- In the future, do you intend to ask friends or family members about safe drinking practices?

Novelty

- Respond to the following questions with the messages you have just seen in mind.
- This argument is new to me.
- This argument is unusual.
- I have never seen this argument before.
- This argument is fresh.
- This is an exceptional argument.

Post-exposure Alcohol Attitudes

- I like binge drinking.
- Binge drinking is fun.
- Binge drinking is good.

Counterargument

- I found myself actively disagreeing with the message's points
- I found myself actively disagreeing with the message
- I was looking for flaws in the message's arguments
- It was easy to disagree with the arguments made in the message

Alcohol Benefits

- If I had five drinks in an evening I would enjoy socializing more with other people
- If I had five drinks in an evening I would be more outgoing.
- Drinking alcohol makes celebrations more special.
- Drinking alcohol makes a party more fun.
- Drinking helps you have more fun on a date.

Alcohol Risks

- If I had five drinks in an evening I would react badly.
- The consequences of my drinking would be a problem for me.
- Drinking would have a downside for me.

Character Identification

- I identified with the people in the ad
- I felt for the people in the ad
- I imagined what it would be like to be in their position
- What happened to the character felt like it happened to me

Perceived Message Sensation Value

- I thought the videos were unique/common
- I thought the videos had powerful impact/weak impact
- I thought the videos didn't give me goose bumps/gave me goose bumps
- I thought the videos were novel/ordinary
- I thought the videos were boring/exciting
- I thought the videos were emotional/unemotional
- I thought the videos had strong visuals/weak visuals
- I thought the videos were not creative/creative
- I thought the videos were not graphic/graphic
- I thought the videos were arousing/not arousing

- I thought the videos were unusual/usual
- I thought the videos were involving/not involving
- I thought the videos were not intense/intense
- I thought the videos had weak sound tracks/strong sound tracks
- I thought the videos were not dramatic/dramatic
- I thought the videos were stimulating/not stimulating
- I thought the videos had strong sound effects/weak sound effects

Humor

- Overall, I thought the videos were not funny/funny
- Overall, I thought the videos were not amusing/amusing
- Overall, I thought the videos were not humorous/humorous
- Overall, I thought the videos were not entertaining/entertaining

Manipulation Check

- The video made me feel worried about looking foolish to others